



UNITED STATES PATENT AND TRADEMARK OFFICE

fr
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/961,254	09/25/2001	Koichi Otsuki	214037US2	7290
22850	7590	12/15/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			CARBONELLO, MICHAEL J	
		ART UNIT	PAPER NUMBER	
		2622		

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/961,254	OTSUKI, KOICHI
	Examiner Michael J. Carbonello	Art Unit 2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 01 November 2005.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-28 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 25 September 2001 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's amendment was received 11/09/2005. It has been entered and made of record; claims 1-28 are pending.

Response to Arguments

2. Upon review of the current amendments, and the current art of record, the examiner believes that the references of Wataya et al can still be interpreted anticipated (claims 1, 8, 9, 11, 15, 22, 23, 25) and Wataya et al and Kakutani as obvious (claims 2-7, 12-14, 16-21 and 26-28) at the time of invention.
3. Applicant's arguments, filed 8/22/2005, have been fully considered, but they are not persuasive.

4. In response to applicant's arguments 09/01/2005, regarding claim one, which was previously cited in the office action filed 08/01/2005, as being anticipated by Wataya et al.

5. Claim 1 of the applicant reads; "A printing device for printing an image on a printing medium." Column 1, lines 14-20; Wataya et al discloses "a recording apparatus for recording information such as images, characters or the like on a recording medium." The examiner used this definition for "recording apparatus" in later prior art references, as it was the description for this particular invention. Thus using the broadest reasonable interpretation allowed a recording device (as defined by Wataya et al) would be considered equivalent to a printing device for printing an image on a medium.

6. Applicant further discloses, "feed mechanism configured to advance the printing medium intermittently, wherein the feed mechanism is adjusted so that an average feed error δ_{ave} is in the vicinity of zero with respect to a most slippery printing medium among plural types of printing media designed to be used in the printing device." As previously disclosed, Column 3, lines 58-61 discloses "a recording apparatus capable of recording an image of good quality by controlling the record timings in accordance with the feed speed of a recording medium." And further discloses in column 4, lines 10-13; "It is another object of the present invention to provide a recording apparatus capable of correcting a feed speed variation of a recording medium and also an error in detecting a feed speed." The applicant claimed invention to advance the printing medium intermittently so that the feed error for a particular printing medium is zero. This is to obtain the best image possible for that particular medium.

7. While the applicant is correct that Wataya does explicitly make state "intermittent feed of a printing medium or adjusting an average feed error to be zero with respect to a most slippery printing medium among plural types of printing media designed to be used in the printing device." Wataya et al does disclose correcting feed speed variation of a recording medium. Using the broadest reasonable interpretation this would be the same intermittently adjusting the feed rate (to obtain the best quality image possible). Part of adjusting the feed rate would cause the printing medium to move at an intermittently. Further the term feed speed, or feed rate is equivalent to the term feed amount. Logically the faster the feed speed, the greater the amount of paper would be fed.

8. In conclusion, Wataya et al does teach a method of correcting the feed amount of a printing medium, and adjusting the feed rate to minimize the feed error.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 8, 9, 11, 15, 22, 23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Wataya et al.

10. Regarding claim 1 Wataya et al discloses in column 3, lines 58-61; "A printing device for printing an image on a printing medium, comprising: a feed mechanism configured to advance the printing medium intermittently." Wataya et al further teaches in column 4, lines 10-13; "the feed mechanism is adjusted so that an average feed error δ_{ave} is in the vicinity of zero with respect to a most slippery printing medium among plural types of printing media designed to be used in the printing device."

11. Further with respect to claim 1, and additional with claims 9 and 23, Wataya et al discloses the method described above. Using the broadest interpretation of the phrase "slippery print medium," the print medium used by Wataya may be a slippery print medium when compared to other printing media.

12. Regarding claim 8, 11, and 22, Wataya et al discloses the method discussed above in claim 1, and further discloses in column 5, lines 11-18 [see figure 1. feature 2] "A printing device for printing an image on a printing medium, comprising: a feed mechanism configured to advance the printing medium intermittently, and a controller configured to supply a feed command to the feed mechanism to control the advance of the printing medium by the feed mechanism; wherein the controller is configured to correct a feed amount such that an average feed error δ_{ave} is in the vicinity of zero with respect to at least one specific printing medium among plural types of printing media designed to be used in the printing device, and to supply the feed command representing the corrected feed amount to the feed mechanism."

13. With respect to claims 11 and 25, applicant claims, "A printing device according to Claim 8, wherein the controller is configured to determine the corrected feed value based on feed amount data and feed correction data included in printing data supplied from another device external to the printing device." Figure 2, System Controller [54], is clearly part of the Printer [20]. This drawing submitted by the applicant shows an embodiment where by the System Controller controls many functions of the printer including: main scan driver [61], CR motor [30], Sub-Scan Driver [62], paper feed motor [31], head driver [63], and print head [36]; are controlled by said System Controller [54], which is internal to the printing device. Therefore, it is not necessary for Wataya et al to utilize an external device to supply feed amount data and feed correction data from an external source if the corrections can be made from an internal controller.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 2-7, 12-14, 16-21, and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wataya in view of Kakutani. Wataya discloses the methods discussed above.

15. With respect to claim 2, 12, 16, and 26 Wataya does not disclose, "A printing device further comprising: a print head configured to discharge ink to form dots on the printing medium, wherein the print head has N nozzles arranged in a feed direction of the printing medium by a pitch $k \bullet D$ for discharging ink of same color, where k is an integer of 1 or greater, D is a smallest dot pitch in the feed direction, and N is an integer of 2 or greater, and wherein the average feed error δ_{ave} regarding the most slippery printing medium is an average error when the feeding has been performed by a feed amount of $N \times (k \bullet D)$ or smaller."

Kakutani discloses in column 1, lines 19-44; "In this specification, the following parameters are used to define a printing scheme.

N: Number of nozzles;

k: Nozzle pitch [dots];

s: Number of scan repeats;

D: Nozzle density [nozzles/inch];

L: Sub-scanning pitch [dots] or [inch];

w: Dot pitch [inch].

(Examiner's Note: in some cases the applicant uses the same variables, but to represent different information:

N: Number of nozzles [Same as above]

k: Nozzle pitch [Same as above]

s: [Not used]

D: dot pitch [Different]

L: an integer [Different]

w: [Not used])

The number of nozzles N is the number of nozzles actually used to form dots. In the example of FIG. 35, N=3. The nozzle pitch k is the interval between the centers of the recording head nozzles expressed in units of the recorded image pitch (dot pitch w). In the example of FIG. 35, k=2. The number of scan repeats s is the number of main scans in which all dot positions on a main scanning line are serviced. In the example of FIG. 35, s=1, i.e., all dot positions on a main scanning line are serviced in a single main scan. When s is 2 or greater, the dots are formed intermittently in the main scanning direction. This will be explained in detail later. The nozzle density D (nozzle/inch) is the number of nozzles per inch in the nozzle array of the recording head. The sub-scanning pitch L (inch) is the distance moved in 1 sub-scan. The dot pitch w (inch) is the pitch of the dots in the recorded image. In general, it holds that

$w=1/(D \bullet k)$ $k=1/(x(D \bullet w))$." Therefore, it would have been obvious at the time of invention for one of ordinary skill in the art to combine Wataya et al with Kakutani to produce a printing that has a printing head to discharge ink to form dots on the printing medium.

16. Regarding claims 3, 4, 13, 17, 18 and 27 Wataya and Kakutani discloses the methods discussed above, and Kakutani further teaches, in column 1, lines 29-46; Kakutani discloses an example in which $w=1/(D \bullet k)$, where w represents dot pitch, and k, represents nozzle pitch. In a given example Fig 35, k=2, thus $w=1/(D \bullet 2)$. Given this example, any value of $D \geq 1$ will result in the printing medium being within the range of about -.5D to about +.5D. (Examiner's Note: *Kakutani refers to dot pitch with the variable "w" and uses the variable D to represent Nozzle Density, whereas applicant uses variable "D" to represent dot pitch*)

17. Regarding claim 5, 6, 7, 14, 19, 20, 21 and 28 Wataya et al and Kakutani disclose the methods described above.

18. With respect to claims 5, 14, 19, and 28, Wataya et al discloses in column 4, lines 10-21; "It is another object of the present invention to provide a recording apparatus capable of correcting a feed speed variation of a recording medium and also an error in detecting a feed speed...the recording apparatus of this invention comprises a speed detecting roller for detecting the feed speed status of feed means, and timing adjusting means for adjusting an image record timing of each of recording means in accordance with the feed speed of the feed means detected by using the speed detecting roller." Using the broadest interpretation of

the term δ_{ave} to represent feed error, the "capability to detect feed speed variations", is a type of feed error, which as discussed above (if $k=2$) will fall into the range of about $-.5D$ to about $+.5D$ (for $D \geq 1$) for a the most slippery medium.

19. Further with respect to claims 6, 7, 20, and 21, since the error δ_{ave} , is a value determined by the feed rate error, it would have been obvious at the time of invention to one of ordinary skill in the art to adjust the feed speed based on the printing medium (either positive for a more-slippery medium like photographic paper, or negative for a less slippery medium like plain paper) as each of the printing mediums will have varying feed rates.

20. Claims 10 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wataya et al in view of Cogan. Wataya et al discloses the method described above, but does not disclose a "specific printing medium includes roll paper." Cogan discloses in column 2, lines 0-10; "In its fundamentals the invention comprises a contact printer base, a container in which roll paper may be stored and cut, and around the periphery of which the said paper is drawn for printing, means operable to feed the paper around the periphery of the container, guides for the paper, a combined adjustable negative holder and paper mask, adjustable means for marking predetermined positions of the roll of paper for cutting, and means for identifying the said predetermined portions of the roll paper." Therefore it would have been obvious to at the time of invention to one of ordinary skill in the art to combine Wataya et al and Cogan to produce a printing device that includes a specific printing medium that includes roll paper. The motivation is that it further expands the functionality of the claimed device

because it allows the user to utilize roll paper in addition to more common cut sheets.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

21. Koike et al discloses, "a multiple element printer including a print head arranged with N of printing elements for printing dots on a surface of a receiving medium at intervals of k dots where k and N are positive integers mutually prime with each other, in a direction of feeding the receiving medium."

22. Satou et al discloses, "A color correcting method for a color image generating apparatus for overlapping 3 or 4 color materials according to color image data of 3 separated colors of yellow (Y), magenta (M) and cyan (C) or of 4 separated colors of Y, M, C and black (K) to obtain a multicolor image, wherein the apparatus includes a color detector, a test pattern is printed in a vertical/horizontal stripe form of 2-color combinations of 2 of the 3 or 4 colors and is measured by the color detector to find a hue value, a relative overlap deviation of the colors Y, M, C or Y, M, C, K is calculated from the found hue value, and an irradiation start position of a semiconductor laser in a main-scan direction and an irradiation start position of the semiconductor laser in a feed direction are controlled to correct the relative overlap deviation."

23. Chia discloses, "This invention relates to printing mechanisms, particularly those that use stepper motors to advance paper through the mechanisms. The

invention also relates to a method of advancing paper through a printing mechanism."

24. Matsubara et al discloses, "A recording head having a plurality of ink discharge element lines arranged thereon is moved in a direction different from the direction of arrangement of the ink discharge elements to conduct a main scan, and at the end of the main scan, a recording medium is moved by a predetermined width in a direction different from the main scan direction to record an image. A record area of the recording head is divided into a plurality (n) of areas and each unit image area on the recording medium is main scanned n times by using the n divided areas of the recording head and thinned images with a print factor of 1/n are sequentially recorded to complete the record of the unit image area."

THIS ACTION IS MADE FINAL.

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Carbonello whose telephone number is (571) 272-0625. The examiner can normally be reached on Monday - Friday 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Coles can be reached on (571) 272-7402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael J Carbonello
Examiner
Art Unit 2622

MJC

JOSEPH R. POKERZYWA
PRIMARY EXAMINER
ART UNIT 2622
Joseph R. POKERZYWA